emissions using Equation D–5 of this appendix.

2.3.2.2 Provide information on the contractual sulfur content from the pipeline gas supplier in the monitoring plan for the unit, demonstrating that the gas has a hydrogen sulfide content of 1 grain/100 scf or less, and a total sulfur content of 20 grain/100 scf or less.

2.4 Missing Data Procedures.

When data from the procedures of this part are not available, provide substitute data using the following procedures.

2.4.1 When sulfur content or oil density data from the analysis of an oil sample or when sulfur content data from the analysis of a gaseous fuel sample are missing or invalid, substitute, as applicable, the highest measured sulfur content or oil density (if using a volumetric oil flowmeter) recorded during the previous 30 days when the unit burned that fuel. If no previous sulfur content data are available, substitute the maximum potential sulfur content of that fuel.

2.4.2 When gross calorific value data from the analysis of an oil sample are missing or invalid, substitute the highest measured gross calorific value recorded during the previous 30 days that the unit burned oil. When gross calorific value data from the analysis of a monthly gaseous fuel sample are missing or invalid, substitute the highest measured gross calorific value recorded during the previous three months that the unit burned gaseous fuel.

2.4.3 Whenever data are missing from any fuel flowmeter that is part of an excepted monitoring system under appendix D or E of this part, where the fuel flowmeter data are required to determine the amount of fuel combusted by the unit, use the procedures in either section 2.4.3.1 or sections 2.4.3.2 and 2.4.3.3 prior to January 1, 1996 and use the procedures in sections 2.4.3.2 and 2.4.3.3 but do not use the procedures in section 2.4.3.1 on or after January 1, 1996 to account for the flow rate of fuel combusted at the unit for each hour during the missing data period.

2.4.3.1 [Reserved]

2.4.3.2 For hours where only one fuel is combusted, substitute for each hour in the missing data period the average of the hourly fuel flow rate(s) measured and recorded by the fuel flowmeter (or flowmeters, where fuel is recirculated) at the corresponding operating unit load range recorded for each missing hour during the previous 720 hours during which the unit combusted that same fuel only. Establish load ranges for the unit using the procedures of section 2 in appendix C of this part for missing volumetric flow rate data. If no fuel flow rate data are available at the corresponding load range, use data from the next higher load range where data are available. If no fuel flow rate data are available at either the corresponding load range or a higher load range during any hour of the missing data period for that fuel, substitute the maximum potential fuel flow rate. The maximum potential fuel flow rate is the lesser of the following: (1) the maximum fuel flow rate the unit is capable of combusting or (2) the maximum flow rate that the flowmeter can measure.

2.4.3.3 For hours where two or more fuels are combusted, substitute the maximum hourly fuel flow rate measured and recorded by the flowmeter (or flowmeters, where fuel is recirculated) for the fuel for which data are missing at the corresponding load range recorded for each missing hour during the previous 720 hours when the unit combusted that fuel with any other fuel. For hours where no previous recorded fuel flow rate data are available for that fuel during the missing data period, calculate and substitute the maximum potential flow rate of that fuel for the unit as defined in section 2.4.3.2 of this appendix.

2.4.4. In any case where the missing data provisions of this section require substitution of data measured and recorded more than three years (26,280 clock hours) prior to the date and time of the missing data period, use three years (26,280 clock hours) in place of the prescribed lookback period.

3. CALCULATIONS

Use the calculation procedures in section 3.1 of this appendix to calculate SO_2 mass emissions. Where an oil flowmeter records volumetric flow, use the calculation procedures in section 3.2 of this appendix to calculate mass flow of oil. Calculate hourly SO_2 mass emissions from gaseous fuel using the procedures in section 3.3 of this appendix. Calculate hourly heat input for oil and for gaseous fuel using the equations in section 5.5 of Appendix F of this part. Calculate total SO_2 mass emissions and heat input as provided under section 3.4 of this appendix.

3.1 SO_2 Mass Emissions Calculation for Oil

3.1.1 Use the following equation to calculate SO_2 mass emissions per hour (in lb/hr).

$$M_{so2}=2.0\times M_{oil}\times \%S_{oil}/100.0 \quad \text{(Eq. D–2)}$$

Where:

M_{SO2}=Hourly mass of SO_2 emitted from combustion of oil, lb/hr.

M_{oil}=Mass of oil consumed per hr, lb/hr.

$\%S_{oil}$=Percentage of sulfur by weight measured in the sample.

2.0=Ratio of lb SO_2/lb S.

3.1.2 Record the SO_2 mass emissions from oil for each hour that oil is combusted.

3.2 Mass Flow Calculation for Oil Using Volumetric Flow

3.2.1 Where the oil flowmeter records volumetric flow rather than mass flow, calculate and record the oil mass flow for each hourly period using hourly oil flow measurements and the density or specific gravity of the oil sample.

3.2.2 Convert density, specific gravity, or API gravity of the oil sample to density of the oil sample at the sampling location's temperature using ASTM D1250–80 (Reapproved 1990), ''Standard Guide for Petroleum Measurement Tables'' (incorporated by reference under §75.6 of this part).

3.2.3 Where density of the oil is determined by the applicable ASTM procedures from section 2.2.5 of this appendix, use the following equation to calculate the mass of oil consumed (in lb/hr).

$M_{oil}=V_{oi1}\times D_{oil}$
(Eq. D–3)

where,

M_{oil}=Mass of oil consumed per hr, lb/hr.

V_{oil}=Volume of oil consumed per hr, measured in scf, gal, barrels, or m^3.

D_{oil}=Density of oil, measured in lb/scf, lb/gal, lb/barrel, or lb/m^3.

3.2.4 Calculate the hourly heat input to the unit from oil (mmBtu) by multiplying the heat content of the daily oil sample by the hourly oil mass.

3.3 SO_2 Mass Emissions Calculation for Gaseous Fuels

3.3.1 Use the following equation to calculate the SO_2 emissions using the gas sampling and analysis procedures in section 2.3.1 of this appendix:

$$M_{SO_2g}=\left(\frac{2.0}{7000}\right)\times Q_g\times S_g \qquad \text{(Eq. D–4)}$$

Where:

M_{SO2g}=Hourly mass of SO_2 emitted due to combustion of gaseous fuel, lb/hr.

Q_g=Hourly metered flow or amount of gaseous fuel combusted, 100 scf/hr.

S_g=Sulfur content of gaseous fuel, in grain/100 scf.

2.0=Ratio of lb SO_2/lb S.

7000=Conversion of grains/100 scf to lb/100 scf.

3.3.2 Use the following equation to calculate the SO_2 emissions using the 0.0006 lb/mmBtu emission rate in section 2.3.2 of this appendix:

$$M_{SO_2g}=ER\times HI_g \qquad \text{(Eq. D–5)}$$

Where:

M_{SO2g}=Hourly mass of SO_2 emissions from combustion of pipeline natural gas, lb/hr.

ER=SO_2 emission rate of 0.0006 lb/mmBtu for pipeline natural gas.

HI_g=Hourly heat input of pipeline natural gas, calculated using procedures in appendix F of this part, in mmBtu/hr.

3.3.3 Record the SO_2 mass emissions for each hour when the unit combusts gaseous fuel.

3.4 Records and Reports

Calculate and record quarterly and cumulative SO_2 mass emissions and heat input for each calendar quarter and for the calendar year by summing the hourly values. Calculate and record SO_2 emissions and heat input data using a data acquisition and handling system. Report these data in a standard electronic format specified by the Administrator.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26548, 26551, May 17, 1995; 61 FR 25585, May 22, 1996]

APPENDIX E TO PART 75—OPTIONAL NO_x EMISSIONS ESTIMATION PROTOCOL FOR GAS-FIRED PEAKING UNITS AND OIL-FIRED PEAKING UNITS

1. APPLICABILITY

1.1 Unit Operation Requirements

This NO_X emissions estimation procedure may be used in lieu of a continuous NO_X emission monitoring system (lb/mmBtu) for determining the average NO_X emission rate and hourly NO_X rate from gas-fired peaking units and oil-fired peaking units as defined in §72.2 of this chapter. If a unit's operations exceed the levels required to be a peaking unit, install and certify a continuous NO_X emission monitoring system no later than December 31 of the following calendar year. The provisions of §75.12 apply to excepted monitoring systems under this appendix.

1.2 Certification

1.2.1 Pursuant to the procedures in §75.20, complete all testing requirements to certify use of this protocol in lieu of a NO_X continuous emission monitoring system no later than the applicable deadline specified in §75.4. Apply to the Administrator for certification to use this method no later than 45 days after the completion of all certification testing. Whenever the monitoring method is to be changed, reapply to the Administrator for certification of the new monitoring method.

1.2.2 If the owner or operator has already successfully completed certification testing of the unit using the protocol of appendix E of part 75 and submitted a certification application under §75.20(g) prior to _____ July 17, 1995, the unit's monitoring system does not need to repeat initial certification testing using the revised procedures published _____ May 17, 1995.